# FAA | AVIATION NEWS

MAY 1963

FEDERAL AVIATION AGENCY

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## AIRPORTS FOR TOMORROW

Establishment of new minimum standards for VFR airports represents a breakthrough in solving an increasingly complex and critical problem—broadening the base for the growth of civil aviation.

Despite the fact that there are nearly 8,000 airports in this country, less than half of which are publicly owned, there are still many areas which do not have the advantage and convenience of air transportation. The need in these areas will unquestionably become more apparent in the future as aviation develops elsewhere in the country.

By 1968, the general aviation fleet is expected to climb to 99,000 aircraft flying about 17.1 million hours annually, compared to 81,693 planes flying 13.3 million hours last year.

Analyzing this forecast, we find that five years from now general aviation will include 6.7 million hours of business flying, 3 million hours of commercial, 2 million hours of instruction and 5.4 million hours of personal flying. During 1962, business flying accounted for 5.5 million hours, commercial 2.4 million, instruction 1.9 million and personal 3.5 million.

The economic implication of this growth is clear: Aviation is big business that represents potential economic muscle for communities with foresight. Not to be overlooked is the convenience factor. And what a good highway does for a town makes the lesson clear.

Airports make it possible to link one community with another by aerial highways, providing mobility of both goods and people. The new airport criteria should prove an incentive for building airports serving smaller aircraft operating under visual flight rules.

These standards have been reduced without compromising safety in any way. Consequently, these airports can be built at a price that will result in substantial savings for the community and the Federal Government.

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***COVER:** Competent, dedicated aviation mechanics personify an ingredient indispensable to safe flight—good maintenance.*

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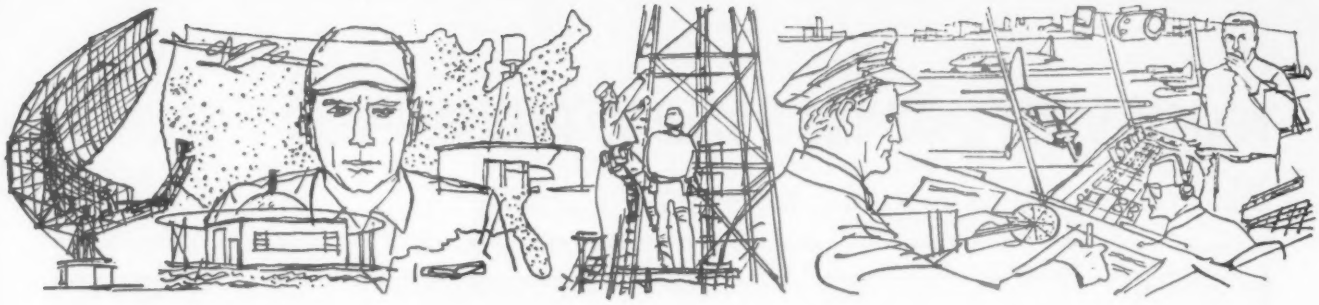


# HALABY LAUDS AVIATION MECHANICS, LAUNCHES 1963 AS MAINTENANCE YEAR

The often unsung thousands of aviation mechanics who keep the nation's airplanes flying safely were paid tribute by Administrator Halaby in an address last month to 2,500 maintenance employees of Trans World Airlines at Kansas City. The Administrator also extended a "well done" to the mechanics from President Kennedy.

The address was an initial step in an FAA program designating 1963 as "Aviation Maintenance Year," a project designed to bring recognition to aviation mechanics, exchange ideas on maintenance, to seek ideas on upgrading mechanical skills, and to update maintenance education material and licensing requirements.

Some of the proposals in FAA's program include establishment of national maintenance awards, increased public meetings between the Administrator and other FAA officials and aviation mechanics, production of a movie telling the aviation mechanics' story; education programs to acquaint the public with the importance of reliable maintenance and a plan to provide improved aviation mechanics schools.

In lauding the mechanics, Mr. Halaby said, "You have that pride of workmanship and that good conscience that makes you careful because you've got the life of another in your hands. I don't think the aviation mechanic has been recognized in a tangible as well as intangible way as much as he should. I hope to put into effect greater recognition by others in the aviation community of what you are doing, the problems you face, the pressure you are under by the industry, by the public at large and by my own Agency."

The Administrator declared, "There is a partnership here among management and government and labor. We'd like to make it a very productive one. The basic concept for the Federal Aviation Agency —the basic purpose—is to promote aviation safety, and that is your basic purpose."

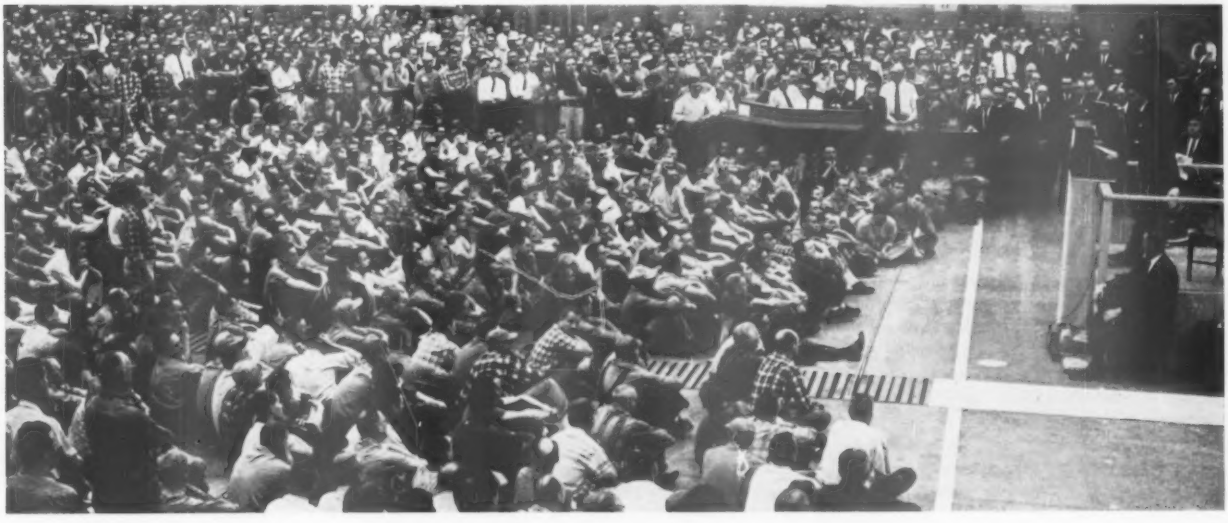
He added that the Agency has a deep, genuine and unswerving interest in the people on the line—the men who sign off on jobs, those who tighten the bolts that "hold together the whole system of safety on which the public relies. A safe, efficient and convenient ride for the passenger—safe passage—is what pulls us all together and what rewards us and inspires us.

Left to right: TWA mechanics B. L. Stanton and F. E. Robertson, union official Louis Gray, N. E. Halaby, and A. E. Jordan, TWA maintenance vice president.

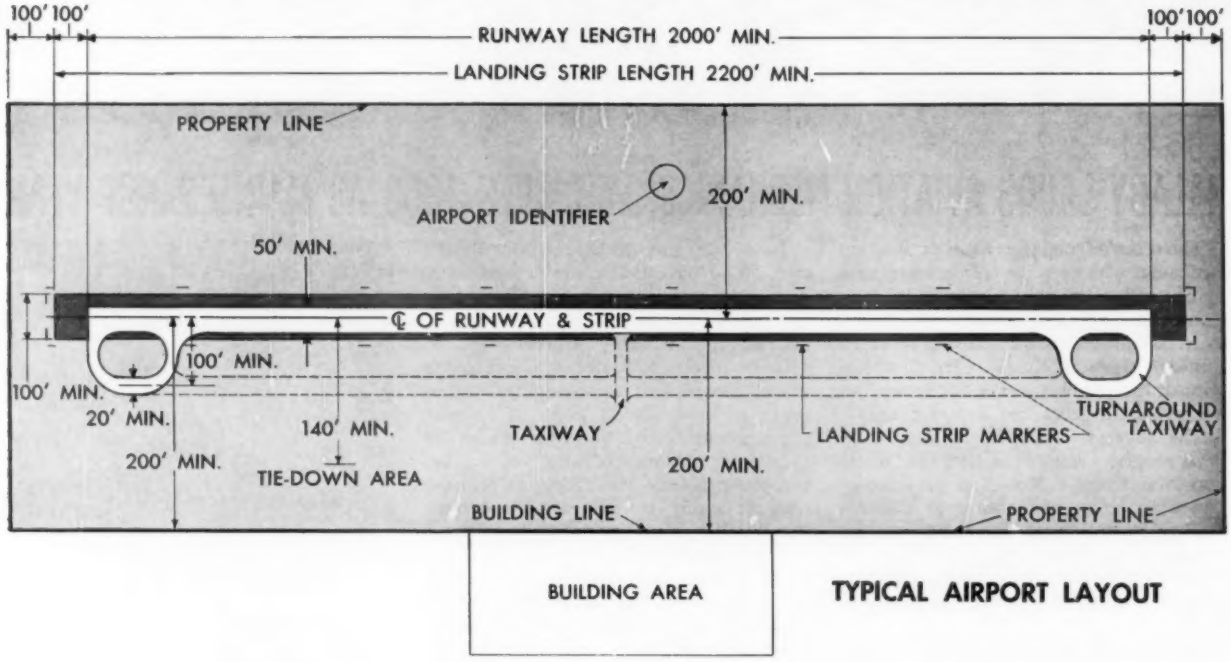
"We're tremendously pleased," he said, "with the excellent over-all performance and safety record this industry of our has been able to achieve. But it isn't enough, and we all know it. We deal with men's lives . . . and we cannot strive for anything less than perfection.

"Let's strive together."

FAA Administrator N. E. Halaby addresses TWA aviation mechanics and maintenance personnel at airline's overhaul base at Mid-Continent International Airport.



# NEW FAA DESIGN STANDARDS A STIMULUS TO SMALL AIRPORT DEVELOPMENT




**TYPICAL AIRPORT LAYOUT**

Small communities troubled with problems of how to finance an airport may now be able to afford one under new minimum standards adopted by the Federal Aviation Agency.

The modified standards for airport design, as set forth in an advisory circular entitled *VFR Airports*, provide minimums that are acceptable for participation in the Federal Aid Airports Program (FAAP). Under these criteria, a small airport may cost a community as little as half of what it would have before it became eligible for FAAP funds.

The standards are designed for the hundreds of small cities and communities throughout the nation which need an airport but do not require a large, complex, expensive installation. They make it possible to build an acceptable airport on as little as 22 acres, exclusive of the terminal building area, plus 10½ acres for clear zones. Minimum runway length is 2,000 feet and minimum width is 50 feet.

Under these standards, an economical airport can be built that will safely accommodate small aircraft operating under visual flight rules. Small aircraft for purposes of the standards are defined as those weighing 12,500 pounds or less. This includes light single-engine and many twin-engine aircraft in operation today—a majority of the nearly 82,000 aircraft in the general aviation fleet.

Although it may be necessary to raise the standards to satisfy a specific need or meet requirements of state or local regulations, they are designed to give small communities at least a start toward building their own airports and offering flying services to the public. The standards also are designed to make it possible to expand the airport in an orderly and planned fashion as community need develops.

FAA's new criteria cover land requirements, site selection, dimensions, lighting and marking. The standards provide for only a single runway where prevailing winds permit, and stress the desirability of easy access to a highway. Included are criteria for taxiways, parking aprons, hangars, tie-down areas, airport building areas and fencing.

Encouraging the development of airports in small communities is recognized by FAA as essential to the establishment of a national airport system. The Project Horizon report to the President, delineating national aviation goals, recommended a complex of airstrips throughout the country to provide national air accessibility comparable to that afforded the automobile by our highway system. The growth of general aviation during the past decade, especially that segment employing single and light twin-engine aircraft, underlines the need.

The publication may be ordered from: Distribution Unit, MS-163, Federal Aviation Agency, Washington 25, D. C. There is no charge for the booklet and orders should identify it as AC No. 150/5300-1, *VFR Airports*, dated March 15, 1963.

## Contract Awarded to Develop New Manual on Light Plane Icing

A manual on icing protection for light aircraft is being prepared under a Federal Aviation Agency contract.

The publication will bring together the massive and diverse data available on this important problem for aircraft manufacturers and the aviation community. General Dynamics/Convair, San Diego, Calif., has undertaken the $50,000, six-month contract.

Areas to be covered in the manual will include icing-cloud characteristics, factors in aircraft icing, the nature of aircraft ice, methods of aircraft ice detection, current and possible future aircraft ice protection systems, cockpit control of these systems, and ways to provide icing protection matched to the varying needs of different types of light aircraft.

# AWARD SUPERSONIC AIRFRAME STUDY CONTRACTS

Three major aircraft concerns undertook a series of airframe studies in the supersonic transport program last month, as FAA and its government-industry partners in this research effort prepared a report to the White House on technical and economic findings to date.

The Lockheed California Company, Burbank, Calif., and Boeing and North American Aviation, a joint venture, began work in nine airframe research areas under contracts totaling $3.4 million. Of this total, $1.8 million was government contract money, with $1.6 million provided by the concerns under cost-sharing agreements.

Lockheed, under a $950,000 contract, is studying wing box fuel-tank design, material fatigue and fail-safe construction. Boeing/North American, with a contract for $850,000 in government funds, is studying variable sweep wing pivots, toughness of both sheet and thick-section metals, welding factors, landing loads and maneuver loads.

The White House report, aimed at answering the question, "Is it feasible and advisable for the government to help industry develop an SST—and, if so, how?", was to go to Vice President Lyndon Johnson, chairman of the National Aeronautics and Space Council, this month.

A team of government and industry representatives, which included representatives from NASA, Defense and the airlines, was established earlier this year within FAA's Supersonic Transport Program Division to gather material for this report. Under the chairmanship of an FAA member, the group undertook a four-fold mission to (1) integrate results of research thus far in the areas of aerodynamics, materials, structures, propulsion, operations and pilot factors; (2) examine, in the light of research, the inter-relationship among economic, technical and operational factors in the design of an SST; (3) define systems requirements for an SST in terms of aircraft, subsystems, ground equipment, personnel, operation, maintenance; and (4) identify elements of a program and program timetable that would meet requirements for development of an SST.

Cornell Aeronautical Laboratory, Buffalo, N. Y., an affiliate of Cornell University, received a $399,669 contract to support this work with computer-centered systems analyses.

Also feeding into the report were:

(1) Findings in two economic study contracts totaling $330,884 to the Stanford Research Institute, South Pasadena, Calif., and the Rand Corporation, Santa Monica, Calif. They have been examining such factors as development and production costs, market factors, international air routes on which an SST might operate and the financial conditions of the world's airlines.

(2) A special report on SST development, production and operating costs, plus management organization for development of an SST, by the Supersonic Transport Advisory Group under the chairmanshop of retired Air Force Gen. Orval R. Cook. This group recommended at the end of last year that the United States go ahead with accelerated SST development.

# FAA Officials Honored for Air Traffic, Air Marking

Two agency officials have received national recognition for outstanding achievements in aviation.

David D. Thomas, director of FAA's Air Traffic Service, received the Laura Taber Barbour Air Safety Award, and Mrs. Blanche Noyes, air marking specialist in the Installation and Materiel Service, was one of six government career women to receive the third annual Federal Woman's Award for outstanding contributions to the quality and efficiency of the career service of the Federal Government.

Thomas, one of the outstanding experts in this country on the management of air traffic control, won the Barbour Award for distinguished contributions to air safety in the administration of air traffic control services for over a quarter of a century.

The award, presented annually, was made jointly by the Society of Automotive Engineers and the American Society of Naval Engineers.

Mrs. Noyes was honored for formulating and directing a nationwide air marking program, including the writing and revising of a technical handbook for designing and building air markers. Mrs. Noyes, who also designed the U. S. standard heliport marker, has been active abroad as well as in this country in assisting nations to set up air marking programs.

The Federal Woman's Award honors women for achievement in the fields of aviation, geology, law, medicine, administration and space science.

# Improved Maintenance Reporting Helps Pinpoint Trouble Areas

General aviation aircraft malfunctions and defects reported to FAA rose to a record 5,660 in 1962, an increase of 45 percent over the 3,897 submitted in 1961.

The record total resulted primarily from the increased emphasis being placed on the reporting of mechanical failures rather than a rise in the number of malfunctions themselves.

FAA hopes to improve substantially on this record in 1963, which has been designated as "Maintenance Year" by Administrator N. E. Halaby.

George H. Weitz, chief of the Maintenance Division in FAA's Flight Standards Service, said the malfunction and defect reports have proved invaluable in charting maintenance trends in general aviation and in spotting specific trouble areas. Last year, he noted, 39 airworthiness directives requiring mandatory action and 506 manufacturers' service instructions or recommendations resulted from the reporting system.

In addition, information on significant incidents is made available on a monthly basis to all pilots and maintenance men through *FAA's General Aviation Inspection Aids Summary*.

Thirty-five percent of last year's reports were submitted voluntarily and included nearly 2,000 reports from mechanics and 160 from owners and operators. The remaining 65 percent were filed by FAA General Aviation Maintenance Inspectors and certificated repair stations.

The Agency is encouraging general aviation airmen to report all mechanical difficulties encountered in aircraft operations to the nearest FAA General Aviation District Office (GADO). Reports should be submitted on a special postcard-sized form available from the GADOs, certificated repair stations and FAA safety inspectors.

After processing, each report is forwarded to the FAA Regional Office holding jurisdiction over the aircraft manufacturer concerned. The information then is evaluated by both the Regional Office and the manufacturer and may result in an airworthiness directive or a manufacturer's service bulletin.

The FAA regions also send a monthly report of malfunction incidents to the FAA Washington Headquarters for use in compiling the *General Aviation Inspection Aids Summary*. This publication is sold on a subscription basis through the Superintendent of Documents, Washington 25, D. C. The price is $1.25 per year by check or money order only.

# New Device Developed to Aid Pilot Age-Stress Study

Dr. Arthur E. Wentz holds miniature electroencephalographic system. In foreground is unit currently being used in research project on pilot aging.

A revolutionary device developed for FAA's Medical Service may provide answers to how brainwave activity is affected by age.

The device is a miniature, lightweight, four-channel electroencephalographic (EEG) system which permits the subject to carry on his normal working activities, completely unhampered in his movements. This will make it possible for the first time to secure recordings of brainwave activity of a pilot under in-flight conditions where he may be subject to stress. The age factor is believed to have a bearing on the ability to tolerate stress and the EEG studies will assist in evaluating this age-stress relation.

FAA's Medical Service will use the data in its pioneering aeromedical research program on man's aging process. Objective of the program is to make it possible to determine the physiological rather than chronological age of a pilot in relation to his flying performance.

The idea for the new equipment originated with Dr. Arthur Wentz, Director of FAA's Georgetown Clinical Research Institute. The $29,600 contract for development of the unit was awarded to Dr. Wilhelm Sem-Jacobsen of Oslo, Norway, and the E. Kaiser Electronics Laboratory in Copenhagen, Denmark.

Appropriately named VESLA—Norwegian for baby—the portable EEG system equipment compares dramatically in performance with the 300 to 400 pound standard electroencephalographic units which require cables and elaborate wiring and permit testing only under limited response conditions of testing rooms.

VESLA consists of two pocket-sized units which weigh less than a pound each, four tiny electrodes that fasten on the head, pens about 1½ inches long, and a recording tape that is about ¾ of an inch wide. It can record for 24 minutes and is made more valuable by incorporation of the start-and-stop timing device suggested by Dr. Wentz which triggers the instrument to record only when it receives an abnormal brainwave signal. The recording stops when the signal returns to normal, and a marking device records the amount of time between waves.

The direct write-out performance has been successfully tested under six times the pull of gravity by volunteers of the Norwegian Air Force. The scientific accomplishment reflected by development of the equipment was noted by King Olaf of Norway at a reception and dinner at which Dr. Wentz represented the FAA.

*Gilles Njamkepo, Director of Civil Aviation of The Federal Republic of Cameroon, West Africa, had America's civil aviation program explained to him last month by N. E. Halaby, Administrator of FAA. Visiting here under a Federal Government grant, Mr. Njamkepo is studying local and international aviation in the U. S.*

*New version of the Nan-1, a Lockheed JetStar bought by FAA to help keep pace with developments in the field of higher performance aircraft. Beginning next month the four-engine jet, formerly used by the manufacturer as a test and demonstrator model, will be used to train FAA personnel and to fly investigators to major crashes.*

# Cockpit Voice Recorders Receive Strong Government and Industry Support

Use of cockpit voice recorders on all airline aircraft received strong support from both government and industry at a recent conference on airborne recorders in Washington.

Officials of FAA and the Civil Aeronautics Board said the equipment would be a valuable aid in accident investigation and recommended regulatory action making voice recorders mandatory on all airline aircraft.

The Air Transport Association of America and the Air Line Pilots Association also endorsed use of the equipment as did Representative Roman C. Pucinski, Democrat of Illinois. The Congressman, whose home district includes Chicago O'Hare International Airport, called voice recorders "a great need" whose use "would improve air safety."

FAA reported that it has nearly completed successful evaluation of two voice recorder systems at its National Aviation Facilities Experimental Center near Atlantic City, N. J. Both systems would be priced under $2,000 and weigh less than 25 pounds.

Officials of FAA and CAB also recommended regulatory action to improve the performance and capability of flight data recorders. This equipment currently is required on all turbine-powered airliners to record airspeed, vertical acceleration, altitude, heading and elapsed time.

Suggested improvements included installation of flight recorders in the aircraft tail to enhance its crash resistance, location of the vertical acceleration sensor in the aircraft center of gravity range, and use of dual static pressure sources. Also recommended was the addition of new flight data parameters such as engine power for each engine, ambient air temperature, wing angle of attack, and yaw rate.

Developmental work on a number of maintenance recorder systems also was reviewed at the meeting.

*FAA's Certificate of Airworthiness was given last month to this Bell 204B helicopter, a commercial version of the U. S. Army's battle-tested UH-1B Iroquois. The 10-place helicopter has a gross weight of 8,500 lbs., can carry a useful load of 3,900 lbs. Cruising range is 230 miles at 120-138 mph.*

# Test Gives Mechanic Schools Greater Autonomy

An FAA proposal to modernize aviation mechanic school curriculums received industry endorsement at a conference in Pittsburgh last month.

The meeting, held at the Pittsburgh Institute of Aeronautics, was attended by representatives from 49 of the nation's 68 certificated aviation mechanic schools. The FAA delegation was headed by George H. Weitz, chief of the maintenance Division in the Agency's Flight Standards Service.

As a result of comments received at the meeting, a prototype project will be initiated permitting a few selected schools to play a greater role in the certification of graduates. These schools will be allowed to develop their own instruction and testing program within broad guidelines laid down by FAA. The guidelines will be more general than those currently prescribed in Part 147 of the Federal Aviation Regulations and will permit the schools to emphasize subjects considered essential to the maintenance of modern, complex aircraft.

The project will aim at improving the quality of instruction and producing graduates with the proper level of aeronautical skill and knowledge to qualify for an aviation mechanic certificate without detailed examination by FAA. Graduates currently are required to pass FAA written, oral and practical examinations to qualify for a certificate.

Specially-trained FAA inspectors will periodically audit the schools' operations to assure that the present high standards of training are maintained.

Selection of schools to participate in the pilot program will be made by FAA in cooperation with the Aviation Technician Education Council, an organization formed three years ago to enhance the standing of aviation mechanic schools in the United States. ATEC also will assist FAA in evaluating the effectiveness of the program.

Results of this program will be instrumental in the formulation of any new regulations affecting aviation mechanic school standards.

# Rule Extended Restricting Use Of FM Radios on Civil Aircraft

FAA has extended indefinitely the rule restricting use of FM portable radios on U. S. civil aircraft.

The rule was first issued as a temporary measure in May, 1961, when tests conducted by FAA showed these radios interfere with very high frequency omnidirectional radio range equipment (VOR). Final action was deferred pending completion of the tests and full evaluation of the results.

This work now has been completed, and FAA has decided to make the rule permanent.

Specifically, the rule prohibits operation of FM portable radios during flight on airliners or other commercial aircraft. It also prohibits their use on other civil aircraft when the VOR equipment is in operation.

The rule will remain in effect as a Special Civil Air Regulation (SR-446B) pending recodification of Civil Air Regulation, Parts 40, 41, 42, 43, 45, and 46. It then will be incorporated in these parts.

# FAA Emergency Plan Can Assist Communities Hit by Disaster

The Federal Aviation Agency can provide assistance in the event a natural disaster such as a flood, earthquake or tornado strikes a community.

Subject to coordination by the Office of Emergency Planning, FAA assistance includes the loan or use of airplanes and pilots, conventional and off-road vehicles and drivers, and firefighting equipment and personnel. It also includes the services of FAA technical personnel to repair electrical systems and other public utilities. Technical assistance also can be provided to help assess damage to public airports and help restore them.

In addition, the FAA offers its air traffic control and aeronautical communications systems, as well as technical operating and maintenance personnel, for transmission of essential information and coordination of emergency search and rescue operations.

People who need FAA assistance may apply for it through state and local governments. State and local governments may apply to any FAA regional or local office, the Aeronautical Center in Oklahoma City, Oklahoma, the National Aviation Facilities Experimental Center in Atlantic City, New Jersey, or to the Regional Director, Office of Emergency Planning, in charge of disaster relief.

# *Maintenance Technicians on the*

The figure clung tenaciously, one arm wrapped around a steel girder. With the other hand the man reached out, gave a final twist to a bolt before inching his way down a spidery network of steel to the ground more than 100 feet below. Once down, he entered the little building where he delicately adjusted a complex piece of electronics equipment that restored the transmitter to service.

It was another routine job in the day of an FAA maintenance technician.

High on a mountain top, deep in the piney woods, or standing lonely against a treeless prairie, squat little buildings with electronic fingers reach skyward. The buildings house the equipment and the fingers are the antennae for more than 9,000 communications and navigational facilities that guide the nation's continually growing fleet of aircraft safely along 350,000 miles of Federal Airways.

Nurturing this network of navigational aids are nearly 9,000 electronics and electro-mechanical technicians of FAA's Systems Maintenance Service. The maintenance technician's work consists of far more than climbing high steel, although he is out in all kinds of weather, atop towering antenna structures to chip ice, inspect, and repair. One day he may be at the top of a remote control air-ground link tower adjusting the antenna. The next he may be 100 miles away bench checking the complex chassis of test-monitor and control equipment at a VORTAC. In between he may be called for emergency repair to put a micro-wave link repeater station back on the air.

This highly skilled specialist keeps VORs, VORTACs, teletype circuits, fan markers, radars, remote control air ground units, micro-wave facilities, low frequency ranges, UHF and VHF equipment, generators, beacons, light systems, and all other FAA electronic and electro-mechanical facilities oper-

ng FAA navigational and communications
ies on the air is the technician's primary
tive, regardless of weather or site location.

Above, an electronics technician climbs a remote control air-ground tower to check the antenna. Above right, day and night they are on the job, keeping facilities operating. Right, technician tests accuracy of the course radiated by a VORTAC.

# ob Around the Clock

Electro-mechanical technician tunes up standby generator.

ating with an enviable in-service record that enhances safety.

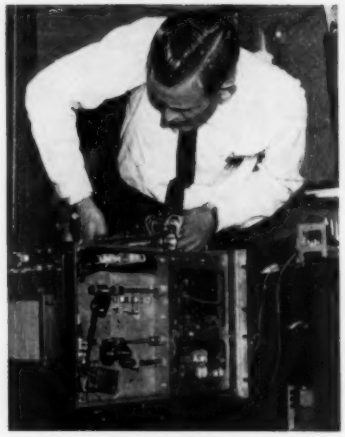
For maximum performance, many facilities are located in remote areas—on nearly inaccessible mountain tops, or even on islands. And the technicians are on call 24 hours a day, every day. Usually they live in a nearby town, but where facilities are extremely remote and isolated, they may reside at the site. To reach the sites for periodic inspections, preventive maintenance, and emergency repair, every available means of transportation is called into use. In many areas—even in the mountains of Virginia—snow shoes are standard equipment and transportation may include a "Snow-Cat" in winter, a four-wheel-drive truck in summer, and a boat during spring runoffs.

Frequently a technician may have to travel from 50 to 150 miles between sites in making his inspections and maintenance rounds. Depending upon the type of facility, inspections are made on a daily, weekly, monthly, or bi-monthly schedule.

It is a part of a technician's creed that if a facility is off the air, getting it back on again takes precedence over any personal inconvenience. He is constantly aware that the lives of many people may depend upon a single equipment adjustment he makes. Maintenance technicians are a loyal group, devoted to their profession.

For facilities maintenance purposes, the United States is divided into 69 geographic districts made up of 642 sectors. Each sector has responsibility for the facilities within its boundaries and the number of technicians varies from three or four to as many as 30 or 40—from small isolated sectors with few navaids to areas which include several airports and an Air Route Traffic Control Center with scores of facilities.

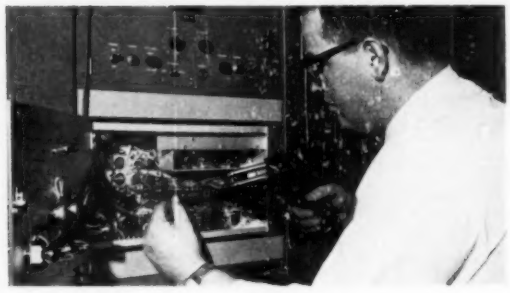
The men who maintain air navigation necessary to keep the nation's aircraft flying safely are a highly trained profes-



Left, on the "bedsprings" antenna of fan marker, FAA technician records current. Remote UHF transmitter above, and receiver in airport control tower below, get overhaul to keep them in top operation condition.

sional group. Before being selected by FAA they have had specialized technical training as well as experience. After joining the Agency they are given more specialized electronics and electro-mechanical training at FAA's Aeronautical Center at Oklahoma City in courses lasting from eight to 13 weeks. Periodically they return to the center for additional training in specialized fields and to keep abreast of new developments.

They are experts and the records show it, for the availability of facilities on the Federal Airways is 97.80 percent of the time—and this includes outage periods due to weather, line failure, power failure, and outages planned in connection with construction and relocation of facilities. Excluding these types of outages, over which the technician has no control, the record climbs to a near-perfect 99.25 percent.



Doppler VOR, one of more complex electronic navigational aids.

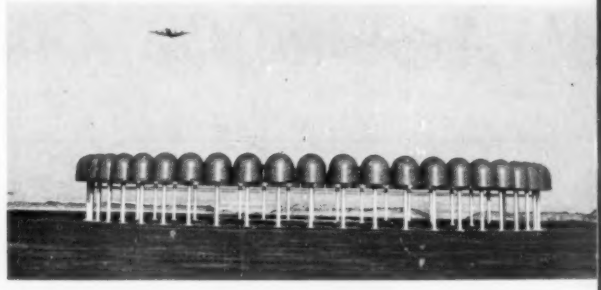
*Effective May 1, routine maintenance was reduced on 115 VORs and eliminated on 32 as part of a year-long FAA study leading to possible reduction in VOR operating costs and increased reliability.*

*If time intervals between maintenance shutdowns can be increased without diminishing VOR service, operating costs should decrease through a reduction in technician man-hours spent at each facility. In addition, if neither the main nor the standby is temporarily out of service for preventive maintenance, there is less chance of complete VOR failure should the one in operation fail.*

*At the end of the study, operation of the test VORs will be compared against all 600 that are still being maintained on the basis of existing procedures.*

*Operational safeguards for the test VORs—all of which are located in low density traffic areas and none in terminal areas—are provided through standby equipment which automatically cuts in if the main VOR fails. There also is increased surveillance by FAA maintenance technicians.*

*As of December 31, 1962, VORs had an operational reliability of 98.9 per cent.*



Left, technician checks for break in wire patch cord panel, part of tower communications gear. Right, Weather Bureau teletypewriter gets same meticulous care as more complicated equipment.

Chock the wheels, tie plane down.

Release brakes after chocks are placed.

Don't forget to install gust locks.

# SAFETY FIRST

## *Postflight Inspection*

Any pilot worthy of the name knows the importance of a good preflight, but too often he is a total stranger to its close cousin—the postflight. No flight is truly completed until proper care of the aircraft has been completed.

No regulation covers the postflight inspection, but good sense does. When you leave the aircraft, the safety of the next pilot to fly it may depend upon you—and that pilot may be you.

It is poor form to taxi up and leave the airplane in front of the gate or hangar for the airport operator to take care of. Either park it yourself or make arrangements to have it done and be sure proper postflight procedures are followed:

■ First, park into the wind if there is a choice. Tie the airplane down and insert chocks both in front and in back of the wheels. Be sure to release the brakes after chocking; brake systems sometimes lock as a result of fluid expansion, causing serious trouble later. Install approved gust locks and put the pitot cover in place.

■ Record and arrange for correction of any in-flight discrepancies. Small items corrected immediately will save time and trouble later. Be sure you also record the flight time so that an accurate record is available for periodic maintenance.

■ Service all fuel tanks and top off the oil to minimize condensation.

■ Put maps, charts and other objects in their proper place in the cockpit. Loose article can cause accidents.

■ Close all windows and lock the aircraft. At many airports, violators are subject to fines. It is also excellent theft protection and it may save someone's life. At an isolated airport recently, two small children suffocated after entering an unlocked small airplane from which they couldn't get out.

■ If aircraft is to be hangared, be sure the hangar has adequate fire protection and check for birds. Birds not only build nests in critical airframe and engine areas, but their droppings impair aircraft surfaces.

■ As a final step, before you leave the airport let someone know where you may be contacted. And don't forget to close your flight plan.

*A good postflight, like a good preflight, is safety insurance. Its cost is a little time and thought.*

Top off all fuel tanks and check oil.

Record in-flight discrepancies.

And don't forget to lock the aircraft.

# Weather... for the Asking

*This is the second in a series of articles written by meteorologists of the Weather Bureau at the invitation of FAA to acquaint pilots with problems of weather and how to cope with them.*

Weather know-how is right at your finger tips.

It may not be exactly what you would order, but at least you can find out what may be in store during your flight. The U. S. Weather Bureau and the FAA have developed a comprehensive communications system to make weather information easily available to pilots. And the pilot who fails to take advantage of this service could become part of a harsh statistic: Weather is a causal factor in a third of the general aviation fatal accidents.

Weather information is now available via a network of transcribed aviation weather broadcasts, recorded telephone forecast service, teletypewriter circuits, 250 Weather Bureau Airport Stations and 350 FAA Flight Service Stations. Weather Bureau offices and Flight Service Stations offer the pilot hourly and special weather reports from hundreds of airports, pilot weather reports, aviation weather forecasts, radar reports, winds aloft information and weather briefing service.

Weather information specialists are ready to serve the pilot both before and during his flight. At Bureau stations, forecasters and briefers give preflight briefings either in the office or by telephone. FAA personnel at Flight Service Stations, trained by the Weather Bureau, are ready and eager to assist pilots by presenting weather briefings based upon reports and forecasts from the Bureau and supplied to Flight Service Stations via radio, telephone and teletypewriter.

In flight, the pilot has current weather information at a twist of his radio dial through continuously broadcast reports on selected FAA low/medium frequency channels. Flight precaution recommendations, aviation weather forecasts for various air routes, pilot weather reports, winds aloft, and surface observations are tape-recorded each hour at Flight Service Stations for the broadcasts which the pilot can receive within a 125-mile radius of the station. Although ground reception distances are less, many airports maintain a receiver on one of these frequencies and have their own weather service for pilots. FAA radio facilities also broadcast current reports at 15 and 45 minutes past each hour. In the areas around Kansas City and Washington, D. C., airborne pilots may speak directly to a Weather Bureau forecaster on 122.6 mc and receive pilot-to-forecaster service.

Two basic types of information are offered the pilot: (1) *reports of weather as it existed* at a specific time and place; and (2) *forecasts of future weather.*

Hourly weather reports stream in from more than 600 observing stations in the United States. Weather briefings for short, one or two-hour flights are based primarily on these reports. The pilot should keep in mind, however, that weather reported *at* specific points is not necessarily indicative of the weather *between* points.

Another type of report—and among the most valuable to pilots—is furnished by other pilots. Pilot weather reports, or PIREPS, are a major contribution to safe flying and are a part of every briefing, when available. PIREPS include reports of severe weather such as tornadoes, thunderstorms, hail, turbulence and heavy icing.

Also available to pilots are summarized reports of storm cloud "echoes" observed on Weather Bureau radars. Transmitted hourly on teletypewriter circuits, and known as RAREPS (radar reports), these give intensity, size, shape and location of radar echoes, as well as the height of echo bases and tops, and the direction of the movement of the storm cloud.

Admittedly, weather forecasting is not an exact science and in every forecast there is an element of uncertainty. However, aviation weather forecasts, warnings and advisories represent the best possible estimates of the weather as it will affect the pilot, providing him with information on which to base his plans.

Weather Bureau aviation forecasts fall into four groups: the Regional Forecast (FN), the Area Forecast (FA), the Terminal Forecast (FT) and the Winds Aloft Forecast (FD). *Regional forecasts,* most useful for longer flights, cover a 24-hour period and predict large-scale weather features over a group of states at intermediate and higher levels. *Area forecasts,* issued for parts of two or more states, cover a 12-hour period with an outlook for an additional 12 hours. They predict in detail weather expected at intermediate and lower levels. A section on icing is always included. *Terminal forecasts* for major airports tell the pilot what clouds, ceiling, visibility and wind to expect at specific airports. *Winds aloft forecasts* predict wind direction and speed for levels up to 25,000 feet MSL over selected airports.

Two types of aviation weather messages, available to pilots both before and during flight, warn of existing or predicted hazardous weather conditions. They are known as SIGMETS (significant meteorological information) and Advisories to Light Aircraft.

*Sigmet advisories* cover tornadoes, squall lines, large hail, severe and extreme turbulence, heavy icing, and widespread dust or sand storms that reduce visibility to two miles or less.

*The Advisory for Light Aircraft,* designed exclusively for the VFR pilot, warns of moderate icing or turbulence, winds of 40 knots or more within 2,000 feet of the ground, visibility of less than two miles and ceilings below 1,000 feet.

In another phase of the program to make weather information more useful, conditions are reported in terms that have meaning for pilots. Many of the terms were chosen after discussions with pilot groups. Consequently, simple contractions and abbreviations are used wherever possible to speed transmission. A convenient reference card containing a key to aviation weather reports and forecasts may be obtained from Weather Bureau Airport Stations.

The red lines on an aircraft instrument panel clearly show the limits of safety. The red lines of weather are not always so clear, but the pilot who takes advantage of the vast weather reporting system and familiarizes himself with a few simple terms and symbols will be a better—and longer-lived—pilot.

Trained Weather Bureau forecaster prepares a terminal forecast for pilots from surface maps and cloud charts.

Above, weather observer checks ceilometer which measures height of cloud bases with photo-electric cell that scans sky. He can also obtain the information, plus other data, from remote console *(right)*.

FAA Flight Service Station personnel, trained by the Weather Bureau as briefers, provide weather information to pilots. Below, latest enroute and terminal forecast is broadcast as part of the flight following service. Right, skilled FAA air traffic specialists brief pilots at a Flight Service Station.

Safety tips include use of glasses, respirator, rubber gloves and apron.

# Rx FOR CROP DUSTERS: *Handle Chemicals with Care!*

Insecticides can kill—not just the bugs they are designed to control, but the crop dusters or aerial applicators as well.

FAA's Aviation Medical Service, concerned with the health of pilots and handlers who may be exposed to the hazards of crop dusting, suggests that the best safety measure is to prevent exposure. It also cautions those who work with chemicals to be aware of the earliest symptoms of toxicity so that immediate treatment can be started before serious harm has been done.

Because insects and man depend upon the same basic life processes, it is not surprising that a chemical that can kill one can harm or even kill the other. In fact, the insect has more built-in protection than man, in the form of enzyme systems which destroy harmful chemicals. Insects even possess the ability to synthesize these enzymes in increased quantity on demand, to develop new protective enzymes, and eventually to become immune to once-effective insecticides.

Although man, because of his size, can tolerate a much larger toxic dose in comparison with insects, he has a limited ability to modify and excrete toxic compounds. Even a man's skin, which protects him from many harmful agents, is no protection from many of the most common insecticides which penetrate it readily. Man is also subject to exposure by inhalation. And inhaling a drug as a dust, vapor, or aerosol can be virtually as rapid a method of absorbing it as by intravenous injection.

A pilot need not be an expert on each of the hundreds of potentially toxic chemicals used by agricultural aircraft today. He can and should be familiar with chlorinated hydrocarbons and organophosphates, two widely-used types which present most of the problems for aerial applicators. The toxic properties of the two groups are similar, but each presents a different problem.

Symptoms produced by the chlorinated compounds are sometimes obscure. As yet, there is no effective specific self-treatment other than normal first aid measures—prompt cleansing of the affected parts with soap and water, alcohol, or other suitable agent. This should be followed immediately by medical aid from a physician.

Among the chlorinated hydrocarbons are DDT, lindane, chlordane, dieldrin, toxaphene and heptachlor. Symptoms, which frequently may be confused with other illnesses, include nausea, dizziness, headache, tremor, and weakness. If the exposure is severe this will be followed by convulsions, shortness of breath, collapse of the circulatory system, and cyanosis—a condition in which the surface of the body becomes blue because of insufficient aeration of the blood.

Indications of organophosphate poisoning are fairly easy to recognize and can be effectively treated. Again the victim may become nauseated. He also may display the following symptoms: vomiting, visual disturbances, excessive secretion of saliva, slowing of the heart, decreased blood pressure, muscle twitching, and lack of anal and urinary restraint. These may be followed by brief convulsions, coma, muscular paralysis, respiratory failure, and even death. Malathion, parathion, methylparathion, diazinon, systox, and phosdrin are among the more familiar organophosphates.

The first step after known or suspected contamination of the skin is a thorough cleansing with soap and water or alcohol. First aid should include administration of atropine by mouth if the symptoms are early and mild, or by intravenous injection if the symptoms are prominent. Field treatment should never go beyond a few such doses of atropine in addition to other indicated emergency measures such as artifical respiration. The patient should then be rushed to a physician or hospital for further treatment.

An especially insidious feature of certain of the organophosphate compounds, such as parathion, is that the onset of symptoms following a single contact with the skin may be delayed as long as 24 to 48 hours. Also, because of residual effects from previous exposure, symptoms may appear on a day when exposure has been slight.

Individual chemicals of both the organophosphate and the chlorinated hydrocarbon groups vary widely in toxicity but the wise crop duster will be as safety conscious in handling them as he is with the condition of his aircraft.

# Letters

FAA

***FAA Aviation News welcomes comments from the aviation community. We will reserve this page for an exchange of views. Please keep them brief. No anonymous letters will be used, but names will be withheld on request.***

### • Lost Pilot Incident

Your editorial staff should be congratulated for your inclusion of the lost pilot incident near Red Bluff, Calif. (*FAA Aviation News*, March).

By presenting it in the manner in which you did, you retained all of the sheer drama of the incident, while so very clearly showing just what is involved when a non-instrument pilot blunders into instrument conditions.

The quote of quotes from the article is close to the end when Aztec 75P said, "Okay, well I guess he got away with it then. . . ."

Whether the FAA's budget would permit this or not, I don't know, but I'd like to see a reprint of that article made available.

Tom Baxter
Van Nuys, Calif.

Are reprints of the lost pilot article available? This actual, taped experience teaches weather safety much more graphically than any person could possibly convey by words in a classroom.

I would like to distribute this story to potential pilots in either ground school classes or private tutoring.

Dru W. Benefiel
Los Angeles

*Plans are being considered to reprint this article, which has evoked a number of inquiries. Requests for reprints should be addressed to FAA Aviation News, Office of Information Services ID-20, Federal Aviation Agency, Washington 25, D. C.*

### • Advanced Ground Instructor

Please tell me what I need to do in order to be certified as an advanced ground instructor. I have been actively and continuously engaged in ground instruction since 1939 and hold the following ground instructor ratings: Civil Air Regulations, Aircraft, Meteorology, Navigation, Instruments, Aircraft Engines, Parachutes and Radio Navigation. I understand that these ratings entitle me to certification as an advanced ground instructor, and that my new AGI certificate also will show the ratings which I now possess but which are not required for certification as an AGI.

Sam R. Hamilton
St. Paul, Minn.

*Your present ground instructor certificate and ratings may be exchanged for an advanced ground instructor certificate at the local General Aviation District Office, Wold Chamberlain Airport, Minneapolis. Two ratings you hold, Instruments and Parachutes, are in excess of those necessary to qualify for the advanced ground instructor but they will be shown on your new certificate.*

### • Crash Transmitter

Why not install radio transmitters in aircraft which could be parachuted to earth in the event of a probable crash and serve as an aid to rescue parties in locating the crashed aircraft? A compact and ruggedly constructed transmitter could be designed to operate automatically for a long period of time on batteries. It also could float if dropped in the water. By sending automatic signals, it would serve as a homing device for search parties.

C. A. Long
Los Angeles

*Your idea is shared by many persons who have made similar suggestions over a long period of years. Considerable work has been done toward development of crash position indicators, and we are currently planning to install some in FAA aircraft for evaluating purposes.*

### • Center Thrust Rating

We are in the process of checking out our people for the Center Thrust Rating relative to the new Cessna Skymaster. Field personnel are inquiring as to whether or not a Blue Seal certificate will be a prerequisite for such rating. Is there a definite statement on this that we can make?

Leslie L. Thomason
Cessna Aircraft Company
Wichita, Kansas

*A certificated pilot applying for an additional aircraft class rating is not required to meet the current certification requirement for the control of an airplane by reference to flight instruments. FAA inspectors and examiners, however, encourage pilots at every opportunity to qualify themselves and demonstrate the competence required for Blue Seal certificates.*

### • Physical Exam

Does a current physical examination qualify me as a pilot for airplanes in which I am checked out? What procedure must I follow to qualify for an instrument flying license? Where do I send a change of address notice?

Eugene W. Hamilton
Brookings, S. C.

*The possession of a valid medical certificate is one of the requirements for a pilot to exercise the privileges of his certificate. Other requirements pertaining to recent flight experience are contained in FAR, Part 61, Section 61.47.*

*You may have an instrument rating added to your commercial pilot certificate by complying with Sections 61.35 and 61.37 of Part 61 of the Federal Aviation Regulations.*

*Notice of change of address should be forwarded to the Federal Aviation Agency, Airman Certification Branch, FS-960, Home State Life Building, 621 North Robinson, Oklahoma City 2, Okla.*

### • Instrument Ground School

As a military operations officer, I have had many opportunities to assist general aviation pilots in making emergency landings at Air Force bases. The basic cause of these emergency landings was lack of knowledge of the radio and navigation equipment available both in the aircraft and on the ground.

Military and commercial carriers have long recognized the necessity for refresher training in instrument procedures due to equipment changes and air traffic control requirements and I am certain that general aviation pilots would welcome a practical method of obtaining the training. But many of the schools available for this training are expensive and inconveniently located for a majority of pilots.

Would the FAA consider, as practical, a traveling instrument ground school that could take this information to the home airports where instructors could conduct evening classes? The instruction could include VOR, DME, ILS, GCA, DF, and related radio navigation procedures.

The Blue Seal program is a tremendous step in the right direction and if supplemented by a periodic instrument ground school refresher course, it could be even more effective. I anticipate flying for pleasure following my retirement from the Air Force and this proposal is made in an attempt to contribute something, even if only an idea, to the future of aviation.

William C. Stitt
Major, USAF
Malmstrom AFB, Mont.

*FAA encourages the updating and modernization of skills of certificated pilots commensurate with improvements in aircraft capabilities and radio navigational aids. Your idea of a traveling instrument ground school has merit, and is training of a sort which we encourage for private enterprise. Should you, upon retirement, decide to proceed with such a program, we shall be glad to provide technical assistance.*

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**Cartoonist Bob Osborn's high-living pilot on the next page is having trouble focusing, but clearer eyes will have no trouble.**

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**Is not the way to make an ETA.**